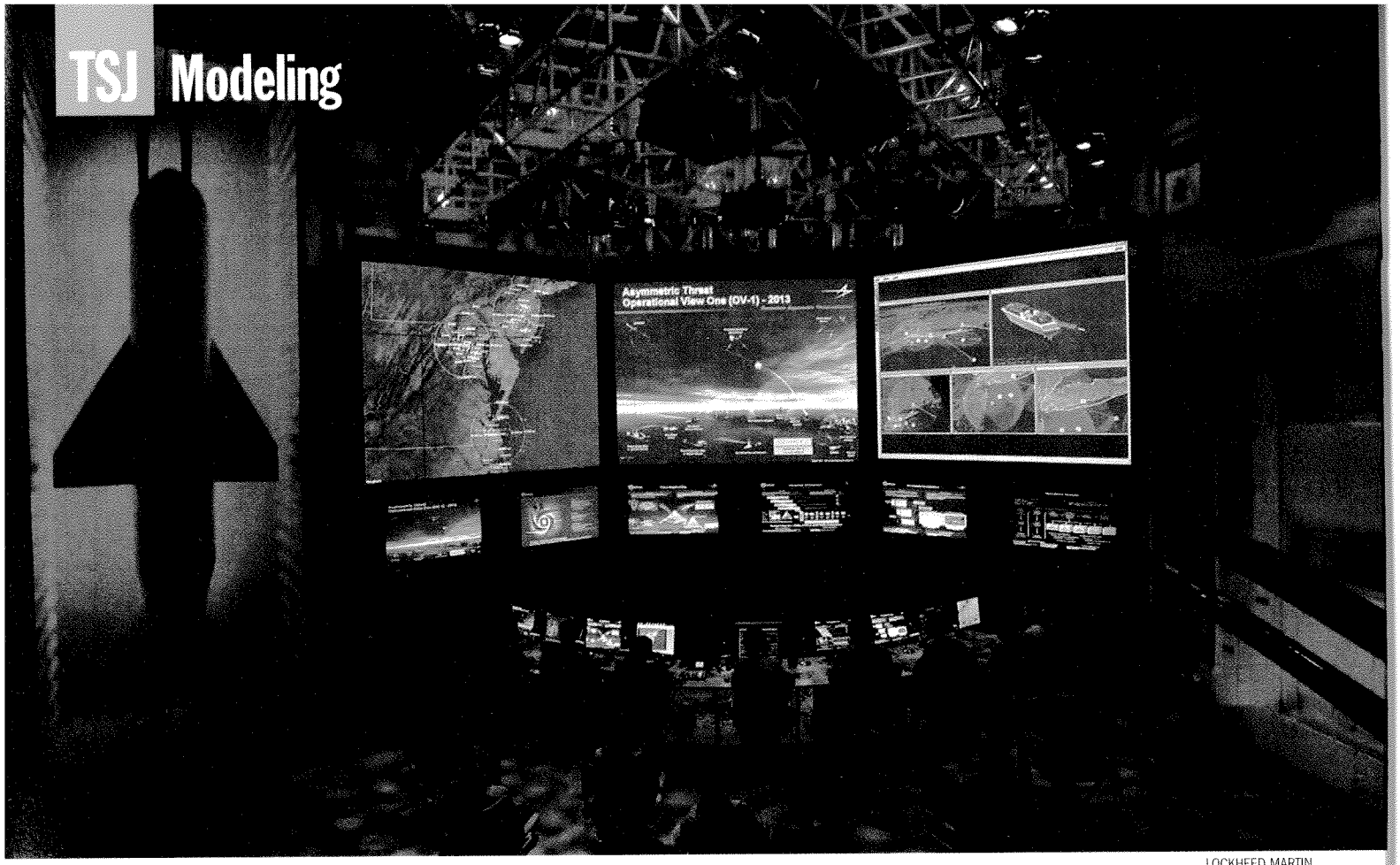

LOCKHEED MARTIN

The modeling and simulation surge has helped spur the building of net-centric laboratories such as this Lockheed Martin center, known as the Lighthouse.

In the political eye

U.S. modeling and simulation caucus puts congressional weight behind technology efforts

By Michael Peck

Congress has hundreds of caucuses where members band together to support causes ranging from autism to baseball. But a caucus for modeling and simulation? That seems unlikely even for Capitol Hill.

Yet U.S. congressman J. Randy Forbes sees it differently.

"When you look at an industry where the average salary runs between $59,000 and $65,000, there aren't too many industries that can rival that."

Forbes, R-Va., is chairman of the new Congressional Modeling and Simulation Training Caucus. Its goal is to educate Congress and the public about the importance of modeling and simulation for America. So far, the caucus has 10 congressmen. All are Republicans from states with a defense modeling and simulation (M&S) presence. The nine other members are John Carter, Mike Conaway, Jo Ann Davis, Thelma Drake, Tom Feeney, Anthony "Ric" Keller and Joe Wilson.

The caucus held a technology demonstration on Capitol Hill in February. Among the companies attending were Anteon, Boeing, L-3 Communications, Lockheed Martin, MaK Technologies, Northrop Grumman and SAIC.

"We had a packed room," Forbes said. "Most of these caucuses, when they kick off, they have just a few members."

It was a good chance for M&S companies to display their wares, said Charles Lutz, director of the Orlando, Fla., office of Dynamic Animations Systems, which makes graphics creation tools for simulators. "We got a lot of exposure."

The idea for the caucus came from a coalition of about 15 small M&S companies, said Ed Harvey, president of the National Modeling Analysis Simulation and Training Coalition. The impetus was a need to get a voice in Congress.

"If you said M&S to any of the members of Congress, they wouldn't know what you were talking about," said Harvey, who is president of BMH Associates in Norfolk, Va. The group contacted Forbes, whose Virginia district includes Joint Forces Command, a significant M&S user.

The caucus has an ambitious agenda that delves into everything from education to telecommunications policy. At the top of the list is persuading the Defense Department to change its procurement policies. Forbes believes labyrinthine acquisition rules discourage companies from going into the M&S field. "Government can't make an industry flow, but at least we can try not to hurt it," Forbes said.

Rep. J. Randy Forbes

Other caucus goals:

- Fostering dialogue between the M&S industry and the government.
- Encouraging the government to provide infrastructure, especially in data communications. "Connectivity will be very important to this industry," Forbes said.
- Encouraging local communities to attract M&S businesses. "If we can get local leaders to realize that vacant land around military bases is an opportunity for these companies, those companies will come. If you provide the connectivity, they will come," Forbes said.
- Stimulating M&S education, such as the graduate program in M&S at Virginia's Old Dominion University. Old Dominion also created the Virginia Modeling, Analysis and Simulation Center in Hampton Roads, located near JFCOM headquarters.
- Educating Congress. "Many of our [congressional] members don't have a clue where this industry has come from and what it can do," said Forbes, who is encouraging companies to contact their congressmen.

Harvey said he hopes the caucus also will tackle other issues, such as persuading Congress to raise more money for small business innovation research (SBIR) contracts. SBIRs are the lifeblood for many of the small companies that do much of the cutting-edge simulations work. In addition, Harvey would like to see Congress include money up front for training and simulation when it funds big-ticket projects such as the Joint Strike Fighter. "I know these things are going to take years," he said.

Forbes agreed that changing national telecommunications and education policies are tough challenges for an informal group such as the caucus. "But you have to start somewhere," he added. He also admitted that there is no guarantee that the caucus will be able to persuade Congress to spend more dollars on M&S. Yet Forbes argues that Congress can help shape the future of the M&S industry, in what he likens to the early days of the automobile industry. "We can write the sheet on what this industry will look like."

The caucus is aiming at a broader audience than Congress. In addition to educating politicians, Forbes wants to educate the public. "It's difficult to take what's in the mind of the M&S industry and put it in a picture that the average citizen can understand," Forbes said.

The caucus also will encourage greater use of modeling and simulation in the private sector. "When I talk to the CEOs of large corporations, half have heard of it and half have never heard of it," said Forbes. He sees opportunities for M&S in medicine, environmental science and manufacturing. Harvey reports that he's already seeing more signs of civilian use of M&S. Along the Virginia coast, modeling software is being used to predict beach erosion.

Still, the military will remain the biggest user of modeling and simulation for the foreseeable future. Forbes said he is less than satisfied with what he has seen of DoD M&S, and suggested that the department is in for scrutiny.

"I've asked questions in my hearings. I won't mention people's names. But they're pretty high up, and they thought M&S was accounting packages," he said.

GANGBUSTERS IN CHINA

An interesting angle that the caucus will play up is the specter of other nations surpassing the United States in modeling and simulation. Forbes wants Americans to realize that America does not have an M&S monopoly. "It is going gangbusters all over the world, including China, which is doing some cutting-edge stuff. We want to make sure the United States is in the forefront of this."

Indeed, one Web site features links to M&S groups in more than 20 nations, including China, Japan, Korea, Sweden, Hungary and Latvia. The entertainment game industry is increasingly outsourcing production to nations such as Russia, where top-quality programmers can be found.

Forbes said he spoke with a simulations expert who gave an M&S presentation in China. The expert anticipated an audience of 500 — and found an audience of 5,000.

"What was interesting was that the questions they asked were cutting-edge questions," Forbes said. "It showed they were close to where we were, and the projects they were working on were cutting-edge projects."

One area where the caucus may play the role of broker is in encouraging more cooperation between M&S and the entertainment gaming industry. "There are so many

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Shining light laboratories

By Karen Walker

Two new modeling and simulation experimentation centers open this year, each aimed at placing the companies that own them front and center in the network-centric operations (NCO) race.

Lockheed Martin cuts the ceremonial ribbon on its $31 million Center for Innovation in Suffolk, Va., this spring. Nicknamed the Lighthouse, the center's dramatic architectural design covers 50,000 square feet and provides more than 2 million cubic feet of reconfigurable space that can support concurrent work on multiple projects. The center's location on the U.S. East Coast puts it in the same neighborhood as many Lockheed Martin customers, including U.S. Joint Forces Command, U.S. Navy Fleet Forces Command, U.S. Air Force Air Combat Command and U.S. Army Training and Doctrine Command.

Raytheon, meanwhile, plans to open its Net-centric Integration and Experimentation Center in the Washington, D.C., area in September. Dean Cash, Raytheon's director for joint concept development and experimentation, says the center will be "a living laboratory for our engineers and our customers."

Buck Marr, vice president for Lockheed Martin's Center for Innovation, echoes that theme. "Our investment is in a world-class laboratory," he said of the Lighthouse. "We are hoping to create an environment where we can do collaborative work to develop solutions for future war fighters. Our primary reason is to use this center as an enabler for Lockheed Martin to work horizontally across this organization to deliver best-of-breed solutions. We are so large that there is a tendency to work within your group. This will be our chief enabler for collaborative work across Lockheed Martin."

The new centers follow an industrywide trend for modeling and simulation laboratories that showcase NCO capabilities. Boeing has spent some $600 million developing labs that include its two Boeing Integration Centers. Northrop Grumman has numerous Cyber Warfare Integrated Network facilities located across the United States. Honeywell opened a modeling and simulation laboratory in Albuquerque, N.M., last year.

Lockheed Martin says there are advantages to arriving late at the party. "We have pub-

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things that they're doing that could help M&S, but the two haven't married up yet," Forbes said. "There are natural opportunities for us in building coalitions."

Marc Prensky, an author and expert on using commercial games for training purposes, said the defense procurement process discourages small entertainment industry companies from participating. Prensky's company, games2train, has a small-business contract to design a simulation for the U.S. Defense Advanced Research Projects Agency (DARPA). Prensky said he's had to run through plenty of hoops. "You want to go offshore to get artwork? There's a rigmarole. You want to shift money around? More rigmarole. You want to subcontract? Still more rigmarole."

But scarred by the cutthroat business of producing entertainment games, some small companies would rather deal with government paperwork than domineering game publishers and penny-pinching retail stores. A $100,000 SBIR contract may not generate as much revenue as a bestselling commercial first-person shooter, but at least it's steady income.

A stream of entertainment companies has entered the military M&S field, either by producing games for the defense market (often with corresponding civilian versions to tap the cachet of a "military" game), or licensing a game engine that the military can adapt. The blockbuster America's Army, for example, uses the Unreal game engine, which is used by commercial first-person shooters. TACOPSCAV, designed by a former Marine intelligence officer, is used as a training tool by the U.S. military as well as hard-core civilian war-gamers who like the game's realism and attention to detail.

One question is whether the caucus is aimed more at helping small M&S companies rather than the giants such as Lockheed Martin and Northrop Grumman. Forbes worries that Pentagon procurement rules discourage small companies. "What do we need from the procurement process so we don't discourage them? So often our larger companies, while they do a good job in some areas, are much more reluctant to take on new and creative things. We want to make sure everyone is on a level playing field."

OFFICE OF U.S. REP. J. RANDY FORBES

The launch of the M&S Training Caucus on Capitol Hill attracted representatives from many companies hoping to get a voice in Congress.

Michael Peck is a freelance journalist based in Washington, D.C.

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licly recognized that we came into integration center land late," said Mike Upson, the center's director of operations. "Others built centers before we did. We really wanted to see which way the landscape was going. Should we build a building or build networks to do distributed work? We delayed some of our decision processes. We built networks before we built buildings. That gives us a distributed advantage."

GIG NODE

Upson said the Lighthouse was conceived as much more than a demonstration facility. "We are here to offer the facility up as a laboratory to do collaborative systems work for net-centric using tools to do the architectural development. This is still just a building. The power of the building is in the efficiencies you gain by being distributed," he said. In November, the center was stood up as a node on the Global Information Grid (GIG) testbed, which allows collaborative experimentation and testing of a system or solution in a simulated operational NCO environment.

Lockheed Martin is in talks with three other companies about how they will use the center for program work, and is also in "fairly robust" conversations with government organizations that want to use the facility. "Our concept of operations is that transient users will include government and industry partners and academia," Marr said. Government customers will not be charged but will sign cooperation agreements. An agreement with a NATO organization is expected to start next year.

A focus of the Lighthouse is its experimentation capabilities for joint operations and solutions. The company has combined a series of government and Lockheed Martin tools into a High Level Architecture federation that brings together analytical tools designed to support joint experimentation with commercial visualization tools.

"Lockheed Martin is known for its platforms, and we will never lose our focus and intensity for building the best warfighter platforms that technology can support. But today we place those platforms into a proper context and that context is the NCO networked environment," Marr said.

Raytheon says its net-centric center will be a concept design center that will enable its engineers to tap into Raytheon's collective NCO expertise.

"It's the tip of the iceberg because it connects all the capabilities across Raytheon," Cash said. The Arlington, Va.-based center is close to the Pentagon and will be the first portal in a series of about a dozen centers that Raytheon intends to open across the country and that will be connected by the company's Orion network, its command-and-control backbone for exchanging large packets of information in real time.

> **"This is still just a building. The power of the building is in the efficiencies you gain by being distributed."**
>
> MIKE UPSON, CENTER FOR INNOVATION OPERATIONS DIRECTOR, LOCKHEED MARTIN

Raytheon takes a far-reaching view of NCO's future path. While most companies and services talk of systems of systems, or networked platforms, Raytheon believes the NCO concept will evolve further into a system of elements in which subsystems such as sensors or command-and-control systems can be individually selected and brought together to create a weapon that best fits the mission.

Tom Flynn, Raytheon's director of strategic initiatives, outlines the concept: "In today's environment when you try to solve a problem, you go for a system of systems and see if a platform can do the job. But what if it cannot within a certain efficiency or time frame? In an interdependent environment, which all of our services are trying to do, the solution is to bring together the best elements from all those platforms, to take the best sensor or best command-and-control system. Now you are in an environment where you are IP-centric [Internet protocol] and can achieve a capability that is greater than the sum of the parts."